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Improving the CPI physicians services index

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The U.S. Bureau of Labor Statistics (BLS) Consumer Price Index (CPI) for physicians' services measures the change in prices for healthcare services provided by physicians in private practice. Physicians' services comprise medical professional services, including dental services and eyeglasses and eye care services.

Pricing physicians' services is more complex than for most items in the CPI, partly because consumers use a variety of payment methods. In most cases, payment is received at least partly from the consumer's insurance or from Medicare, but a small group of consumers pays in full for physicians' services.

The CPI seeks to measure what comes out of the consumer's pocket at the time of the transaction for most items. For medical care services, however, the price sought is the one received by the physician for cases in which the consumer pays at least part of the service billed directly or indirectly via insurance premiums. (For additional information on medical care prices in the CPI, see the **Measuring Price Change in the CPI: Medical care factsheet**.) Collecting this price is possible only with substantial cooperation from the physicians' offices in the CPI sample, both during the initial visit when the service to be priced is identified and in subsequent periods when that item's price is updated. Starting with April 2018 data, the CPI program changed the methodology for the physicians' services index, reweighting the price quotes collected for the index, by payer type. This was done to correct a possible bias from self-pay prices being oversampled in the index because of a variety of circumstances, which will be explained later in the article. The change should improve the accuracy of the index in the short term while BLS researches a long-term solution. This article describes the data collection issues, the overrepresentation or underrepresentation of certain payer types in the CPI sample, and the change made to improve the index moving forward.

Pricing physicians' services

The CPI program collects prices from physicians' offices that are selected for the sample; if the office is in a group practice, then one specific physician is sampled. A medical service provided by the physician is selected using a sampling technique that ensures that services that count for a greater total of reimbursement have higher probabilities of being selected. In this sampling method, "size" refers to the percentage of total reimbursement of each service over the previous year.

The sampling process in the CPI is designed to create a market basket that is similar to what consumers actually purchase.[1] When an item is selected and introduced into the CPI sample, the chance of a particular type, variety, or brand of item being selected is roughly proportional to its popularity. For example, when a price quote for cheese at a particular grocery store is being initiated (the process by which an item is selected and introduced into the CPI sample), a CPI representative will ask the store management about the revenue generated by the different type, unit size, and brands of cheese. The answers are then used to assign probabilities, so the chance of a specific cheese item being chosen is roughly proportional to consumer purchases of that item.

In the physicians' services index, one of the variables considered is payer type, which is divided into one of the following three types:

- Private Insurance represents prices that are partially paid by private medical insurance. There may be a copayment by the patient, but the price being captured is the total amount received by the medical care provider.
- Medicare prices are those for which the medical care provider is compensated at least partly by the Medicare program.
- Self-pay prices are cash prices that are typically charged to patients who have no insurance.

(Services paid by Medicaid are excluded from the physicians' services index because there is no consumer out-of-pocket component).

Ideally, the percentages of these payer types in the CPI sample would roughly mirror the proportion of consumers in the CPI sample who actually pay these prices. However, data from the Medical Expenditure Panel Survey

(MEPS)[2] indicate that the actual payer-type distribution is dominated by private insurance and is quite different from the distribution in the current CPI sample.

Table 1. MEPS payer-type distribution

Payer type	Percent
Self-pay (cash)	2.7
Private insurance	77.46
Medicare Part B	19.84
Source: U.S. Bureau of Labor Statistics.	

So, a CPI sample that mirrored the MEPS data would have very few self-pay quotes and would have a high proportion of private insurance quotes.

The issue: overrepresentation of self-pay quotes

In recent years, self-pay quotes have been overrepresented in the sample, partly because physicians find these prices relatively easy to provide. Private insurance quotes, in contrast, have been severely underrepresented.

How did this situation arise? The answer lies in the nature of the process of initiating and collecting price quotes in the CPI. The CPI program relies on the voluntary cooperation of physicians' offices, and they often decline requests for private insurance quotes relative to requests for self-pay quotes. This might be because of confidentiality concerns with private insurers, or simply because it is harder for physicians’ offices to look up the private insurer price, particularly when this price information is administered by a third-party agency.

In addition, after a private insurance price is collected for the first time, there may be difficulty collecting the updated price information in subsequent periods. In the past, when a private insurance price couldn't be collected in subsequent periods, sometimes a self-pay price was substituted in lieu of failing to collect any price at all. Such substitutions were considered necessary to protect the sample size because response rates for the physicians' services index were already among the lowest in the CPI. Despite that, the CPI adjusted procedures to stop allowing such substitutions as of October 2017 because they contributed to the overrepresentation of self-pay prices in the sample.

If the prices for all the payer types moved similarly over time, the overrepresentation of self-pay prices wouldn't be a problem. For example, imagine that SUVs were overrepresented in the CPI new vehicle sample. This would only bias the index if SUV prices moved very differently from other new vehicles. Unfortunately, it does not appear that self-pay prices and private insurance prices behave similarly, which is the main reason that CPI treats payer type as a price-determining characteristic. Market forces (changes in consumer demand, changes in laws or regulations, or changes in the supply of doctors and hospitals) that affect these prices may be different, and research shows that they have behaved differently in the recent past, with self-pay prices generally increasing more quickly than other prices.

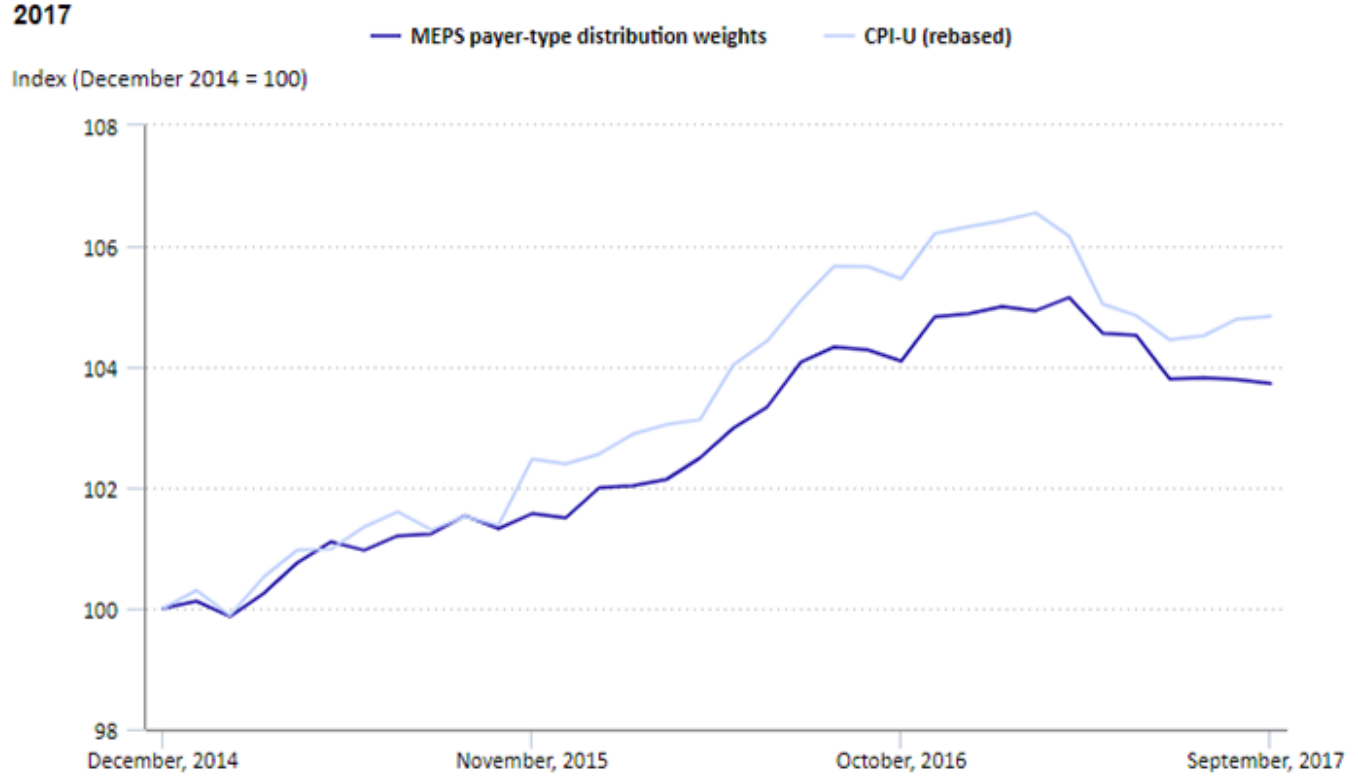
So, the overrepresentation of self-pay prices potentially biases the index for physicians' services. A long-term solution would involve creating a sample with the appropriate mix of payer types, or perhaps using an alternate data source. However, in the short run, BLS has had to consider other options.

The solution: reweighting by payer type

In response to the bias problem, the CPI program created special sub-indexes of the different payer types, and then weighted those indexes according to the MEPS weights to create a physicians' index with the appropriate weight for each payer type. This gives greater weight to the private insurance quotes that are collected and solves the issue of self-pay prices having a disproportionate impact on the index.

Between December 2014 and September 2017, the CPI physicians' services index increased 4.84 percent. The MEPS research index increased 3.75 percent, for a difference of 1.09 percentage points or about 23 percent less than the increase in the comparable CPI index during this period of time. The average annual rate for the CPI index over this period was 2.4 percent, and the MEPS research index was 1.8 percent, for a difference of 0.6 percentage points or about 25 percent less. This makes sense, because the MEPS research index gives relatively less weight to self-pay prices, which generally increase faster. Based on these results, reweighting according to MEPS (using the weights from table one) appears to mitigate the bias created by overweighting self-pay prices. (See chart 1.)

Chart 1. CPI physicians' services index and MEPS-weighted index, December 2014–September 2017



Click legend items to change data display. Hover over chart to view data.
Source: U.S. Bureau of Labor Statistics.

The actual MEPS research index implemented in the CPI is slightly different from the one shown above. The MEPS research index shown above used the same weights for the different payer types across the United States. After examining regional differences in the MEPS weights, the BLS opted to use regional, rather than national MEPS weights, when implementing the new procedure. So, the new MEPS research index implemented in April

2018 used different weights for each of the four major census regions. This should make the new index more accurate by accounting for regional differences in payer-type percentages.

Table 2. MEPS weights by census region

Payer type	Northeast	Midwest	South	West
Self-pay (cash)	1.25	1.14	3.63	2.61
Private insurance	81.88	82.5	73.94	78.99
Medicare Part B	16.86	16.36	22.43	18.4
Source: U.S. Bureau of Labor Statistics.				

These weights were first used in April 2018 and they will be updated annually based on new MEPS data. Past indexes will not be revised.

This change should make the physicians' services index more accurate going forward, but users should be aware of the complications of the index and interpret it cautiously. In addition, users should be aware that the methodology of the index is different prior to April 2018 data.

The MEPS-based reweighting is not an ideal solution. It gives a relatively small number of private insurance quotes a large weight, and if the number of private insurance quotes continues to decline, the problem will only get worse. It would certainly be preferable to have a sample that matched consumer behavior and, in particular, to have a larger number of private insurance quotes. Given that many medical rate updates are based upon the CPI, it is hoped that improved response from medical care providers will allow for a more accurate index in the future. We will continue to look for ways to improve the existing sample, including considering additional methodological changes. Alternate data sources, such as medical claims data, will be considered if they are appropriate for measuring consumer price change for physicians' services.

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NOTES

[1] The (Consumer Price Index) *Market basket* is a package of goods and services that consumers purchase for day-to-day living. The weight of each item is based on the amount of expenditure reported by a sample of households.

[2] The Medical Expenditure Panel Survey (MEPS) is a set of large-scale surveys of families and individuals, their medical providers, and employers across the United States. The MEPS website is here: **www.meps.ahrq.gov/mepsweb/**. MEPS data are released with a time lag; the latest MEPS data is from 2015. This is similar to the time lag from the Consumer Expenditure survey used as the basis for expenditure weights in the CPI; current CPI weights are based on surveys from 2015 and 2016.

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